Peabody, Daniel (EGLE)

From: Roberts, Keegan <robertsk@cdmsmith.com>
Sent: Monday, June 22, 2020 12:24 PM
To: Saric, James; Von Wallmenich, Theo/DET
Cc: Peabody, Daniel (EGLE); Ruhala, Sydney (EGLE); Bennett, Brian
Subject: Kalamazoo OU5: EGLE comments on "Area 6 Pre-Supplemental Remedial Investigation Work Plan – Lines of Evidence for Monitored Natural Recovery"
Attachments: EGLE_DetailedComments_KalamazooRiver_OU5_Area6_Pre SRI Work Plan LOE for MNR_22-June-2020.docx

Hi Jim and Theo,

As Dan and Sydney are both furloughed today, please find attached EGLE's comments on Wood's *Area 6 Pre-Supplemental Remedial Investigation Work Plan – Lines of Evidence for Monitored Natural Recovery.* I'm not sure if Dan and Sydney will be sending a formal transmittal letter, but we wanted to get you our technical comments ASAP.

Thanks,
Keegan

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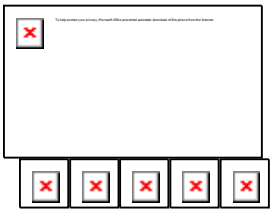

OU5 Allied Paper, Inc./Portage Creek/Kalamazoo River Superfund Site: Area 6
Area 6 Pre-Supplemental Remedial Investigation Work Plan – Lines of Evidence for Monitored Natural Recovery (May 18, 2020)
June 22, 2020

GENERAL COMMENTS

Commenting Organization: EGLE **Commenter:**
General Comment #1: EGLE has concerns regarding a.) the accuracy/representativeness of total PCB concentrations from recent RP sampling efforts and b.) the use of that data to attempt to discern temporal changes in total PCB concentrations. Temporal changes in contaminant concentrations are a key component of any monitored natural recovery (MNR) evaluation. Until accurate total PCB concentrations are known, temporal trend analyses of PCB concentrations should not be conducted. EGLE understands that efforts to rectify total PCB quantification concerns have been initiated. Georgia Pacific and Wood are currently working to produce a recommended standard operating procedure (SOP) for Aroclor analysis using EPA Method 8082 for Operable Unit 5 (OU5) of the Kalamazoo River. The State's understanding of this recommended SOP is that it will require Pace Analytical to make several changes not previously used in their analysis. Please revise the text to note if the recommended SOP will be used for the Area 6 Pre-SRI MNR sediment samples, what steps will be taken to evaluate if the observed changes (if any) in PCBs concentrations are the result of implementing the new SOP or the result of natural/anthropogenic changes within the river system (e.g., MNR, erosion, etc.), and how the previous recent data sets will be addressed in light of the PCB quantification issues.

Commenting Organization: EGLE **Commenter:**
General Comment #2: Section 3.2.2 of Wood's *Area 1 95% Sediment Remedial Design – Crown Vantage Side Channel* (April 30, 2020) states as follows: "The more significant impact of Morrow Dam is likely the trapping of Kalamazoo River sediment, especially bedload, flowing into Morrow Lake. Morrow Lake is an approximately 950-acre lake with normal water elevation at approximately 776 feet mean sea level. The lake has the ability to substantially limit sediment passage to the downstream river." First, as the cited document notes, the most significant source of uncontaminated/less-contaminated sediments to OU5 is substantially limited from contributing the sediments most suited for enabling natural recovery. Second, the major sediment sources to Lake Allegan (i.e., the immediate upstream eroding riverbanks and riverbed) are likely contaminated. Source control is a key precursor for MNR. Unless these ongoing sources are properly controlled with accurate PCB delineation, dredging/excavation, bank erosion control, etc., MNR will not be a viable option for Lake Allegan. Please revise the document to note these important conceptual site model (CSM) factors. This comment also pertains to the CSM discussed on Page 1-8.

Commenting Organization: EGLE **Commenter:**
General Comment #3: The document discusses evaluations of sediment data for assessment of MNR. However, there is no discussion of how temporal changes in fish tissue or surface water concentrations will be assessed. Please revise the document to address this deficiency, even if only to reference an intention to continue ongoing long-term monitoring efforts.

Commenting Organization: EGLE **Commenter:**

General Comment #4: The Recent (2018) Upstream and Downstream PCB IPWCs by Interval figures in appendix A-3 and A-4 show decreases in PCB concentrations at all depth intervals when compared to the Historical Upstream and Downstream PCB IPWCs by Interval figures in appendix A-1 and A-2. The work plan provides an estimated sediment accumulation rate for Area 6 of 0.3 to 0.9 inches per year. Based on this range of estimated accumulation rates and assuming the Conceptual Site Model presented is correct, it could be expected that PCB concentrations in the upper sediment (~0-12 inches) may have decreased, however it would not be expected that the PCB concentrations at depth (> 2 feet) would have decreased as shown. Please revise the document to provide a potential cause(s) for this observed decreased. Previously documented concerns regarding a low bias in recent PCB analytical results should also be considered throughout this work plan as it will likely impact evaluation of MNR in Area 6, potentially resulting in inaccurate conclusions.

EGLE also notes the 2018 and historic data were not sectioned in "standard" intervals, so it is unclear why the data is being averaged. Revise the text and figures to discuss and show comparisons of total PCBs in cores for the data that is available. See General Comment #7 for more information.

Commenting Organization: EGLE **Commenter:**
General Comment #5: Please revise the document to also include sediment traps to assess the total PCB concentrations on incoming sediments and additional bathymetric analyses to assess sediment bed changes on regular intervals and following natural or anthropogenic disturbances.

Commenting Organization: EGLE **Commenter:**
General Comment #6: Please revise the document to discuss the statistical basis behind the number/spatial density of samples to be collected, and the preliminary estimates of the temporal sampling density needed to evaluate MNR within Area 6 in a statistically robust manner.

Commenting Organization: EGLE **Commenter:**
General Comment #7: If cores are being sliced at thinner intervals (i.e. 2-inches) it is unclear why the data is then averaged across a 6-inch (or larger) interval. Standardizing intervals may be appropriate for certain evaluations and discussions but there is value in describing results from thinner intervals that is lost when data is averaged. The workplan, report, and future work group presentations should include discussions on the data as it was collected and analyzed. Please revise the document accordingly.

SPECIFIC COMMENTS

Commenting Organization: EGLE **Commenter:**
Section: 1.2 **Page #: 1-4** **Lines #: First para, First sent**
Specific Comment #1: The text reads as follows: "Collaborative water quality improvement efforts are underway; stakeholders include city and village wastewater treatment plants, local industry and consultants, the Kalamazoo Environmental Council, Michigan Farm Bureau,

Michigan Agricultural Stewardship Association, Michigan Department of Agriculture, Natural Resources Conservation Service, MDEQ, and others." Please revise "MDEQ" to "EGLE".

Commenting Organization: EGLE **Commenter:**
Section: 1.2 **Page #: 1-4** **Lines #: Second para, third sent**
Specific Comment #2: The text reads as follows: "Mechanistically, the deposition and mixing of sediments and watershed soil from upstream areas into near surface sediments in Area 6 results in a decline in PCB concentrations across the bioactive zone in sediment because materials from upgradient sources contain lower concentrations of PCBs." Following on EGLE's above comments, please revise the text to read as follows: ""...in Area 6 may result in a decline in PCB concentrations across the bioactive zone in sediment if the materials from upgradient sources contain lower concentrations of PCBs."

Commenting Organization: EGLE **Commenter:**
Section: 1.3 **Page #: 1-4** **Lines #: First para, first sent**
Specific Comment #3: The text reads as follows: "Data for Area 6 has been collected during field events in 1993/94, 2000, 2009, 2016, 2017, 2018, and 2019." In this document, Wood is utilizing historic data to evaluate the efficacy of MNR as a remedial alternative. However, in Area 1, historical data is not being used for the delineation of remedial footprints in the floodplains. Please revise the text to explain this discrepancy, as Area 1 floodplain materials are much less prone to disturbance than Lake Allegan sediments.

The list of field events also appears incomplete. At the least, the list of field events should also include LTM and other investigations (e.g. Inlet-Outlet Study) that generated data in Area 6. Please revise the document accordingly.

Commenting Organization: EGLE **Commenter:**
Section: 1.3.2 **Page #: 1-5** **Lines #: First subsection**
Specific Comment #4: The text discusses a "Video Condition Survey" and "…the presence or absence of aquatic vegetation and sediment mixing. Please remove this section from the workplan. Presence of aquatic vegetation is not a line of evidence (LOE) for MNR. While it may provide some information regarding sediment stability, subaquatic vegetation assessments do not provide direct measures of changes in contaminant concentration. Additionally, more direct measures of sediment stability (e.g., differential bathymetric analyses) are widely available and used at other contaminated sediment sites.

Also, the "evidence of bioturbation" described is questionable. In the past, these markings have been attributed to carp. EGLE previously provided images of bottom surveys completed in lakes that are devoid of carp but contain these same markings. Therefore, these markings may or may not be indicative of bioturbation and could be a natural sedimentary feature. Please provide additional evidence that these structures are the result of bioturbation or delete the statement.

Commenting Organization: EGLE **Commenter:**
Section: 1.3.2 **Page #: 1-5** **Lines #: Second subsection**

Specific Comment #5: EGLE has multiple concerns regarding the bathymetric/LiDAR surveys. Is there a reason that the bathymetry survey was completed over multiple seasons and using multiple sets of equipment? If this survey is meant serve as a "baseline" as described in the text how would similar and comparable follow-up surveys be completed? EGLE notes that even the LiDAR data generated in shallow environments has been shown to not match other data. Specifically, when we look at the LiDAR data for the main channel in the former Plainwell impoundment the 2017 bed measured by LiDAR is consistently 3+ feet above the 2014 and 2019 beds. Was the LiDAR data ground-truthed for accuracy? How does Wood know that the LiDAR measurements for Area 6 are reliable? Please revise the document to address these concerns.

Commenting Organization: EGLE **Commenter:**
Section: 1.4 **Page #: 1-6** **Lines #: First para, first sent**
Specific Comment #6: The text reads as follows: "The purpose of this Pre-SRI WP is to establish or reoccupy sediment core locations for the collection of sediment PCB data to evaluate the potential for MNR." Additionally, Page 1-7 states: "PCB measurements at reoccupied core locations in net depositional subareas are expected to document surface concentration attenuation (or lack thereof) due to cleaner sediment deposition."

Comparing subaqueous sediment PCB concentrations on a point-by-point approach to assess the efficacy of MNR is a flawed approach. This Site has a demonstrated history of small-scale heterogeneities in PCB concentration, and the ability to directly reoccupy a previous subaqueous sediment core location is near impossible (e.g., boat positioning, GPS accuracy, issues with sampling from the water's surface through the water column, etc.). Any evaluation of temporal trends in total PCB concentrations (utilizing accurate PCB concentration data) should be conducted on an areal basis. This areal extent could be via lake bottom feature, sediment decision management unit (SDU), etc. A point-by-point comparison should not be performed. Furthermore, multiple samples within a single SDU should be used for compositing and to establish that area's "concentration". Please revise the document accordingly.

Commenting Organization: EGLE **Commenter:**
Section: 1.4 **Page #: 1-6** **Lines #: Second para, first sent**
Specific Comment #7: The text states, "Sediment data will be used to support the evaluation of nature and extent in the SRI where appropriate." Who decides what sediment data will be used and what criteria are used to determine whether the use of the data is "appropriate"? Please revise.

Commenting Organization: EGLE **Commenter:**
Section: 1.5 **Page #: 1-8**
Specific Comment #8: The Conceptual Site Model should incorporate bank erosion as a potential ongoing source of PCBs. Please revise.

Commenting Organization: EGLE **Commenter:**
Section: 1.5 **Page #: 1-9**
Specific Comment #9: The first bullet point under Decision Problems states "Do the PCB concentrations in sediment support MNR in Area 6 in combination with other remedial

technologies?" How will "in combination with other remedial technologies" be assessed? What other remedial technologies are being considered? Please expand on this topic in the work plan.

Commenting Organization: EGLE **Commenter:**
Section: 1.5 **Page #: 1-9**
Specific Comment #10: The Conceptual Site Model states that "the effects of ongoing bioturbation and other natural and anthropogenic sediment resuspension may present limitations to the natural recovery of the lake and burial with cleaner sediment". However, bioturbation and resuspension are not included in the Decision Problems as presented. Please incorporate bioturbation and resuspension in the Decision Problems. For example, is evidence of bioturbation and resuspension observed on the lake bottom? How will impacts from bioturbation and resuspension impact the evaluation of MNR?

Commenting Organization: EGLE **Commenter:**
Section: 1.5 **Page #: 1-10** **Lines #: "Analytical Methods to Provide the Necessary Data"**
Specific Comment #11: Please revise the text to note that Wood will utilize the final, revised PCB analytical laboratory procedures currently under development with EPA assistance for PCB quantification.

Commenting Organization: EGLE **Commenter:**
Section: 2.0 **Page #: 2-1**
Specific Comment #12: The work plan states that a reoccupied sediment core location will be collected within approximately 15 feet of another historical sampling location. How does the small-scale (i.e. local) spatial heterogeneity of PCBs in sediment impact the evaluation of MNR? Please address this issue in the work plan. Please also see EGLE's Specific Comment #6 on this issue.

Commenting Organization: EGLE **Commenter:**
Section: 3.1.3 **Page #: 3-2** **Lines #: First para, second sent**
Specific Comment #13: The text reads as follows: "Sediment samples will also be analyzed for grain size in standard intervals (0 to 6 in, 6 to 12 in, 12 to 24 in, and every 1-ft interval thereafter to the bottom of the core)." Please revise the document to note that grain size analyses will be conducted on the same sample intervals for which PCB analyses are conducted. Otherwise, it may be harder to understand the context of any anomalous PCB results.

Commenting Organization: EGLE **Commenter:**
Section: 3.1.4 **Page #: 3-2** **Lines #: Second para, first sent**
Specific Comment #14: Please provide an explanation for stopping analysis for PCBs at 3-feet. The 2018 geochron and PCB cores suggest deeper analysis is justified and necessary. Recognizing little information is available for Lake Allegan and this data may ultimately funnel into the SRI, EGLE recommends the entirety of the core be analyzed.